

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicants:	Gyorgy Miklos, <i>et al.</i>	§	Group Art Unit:	2617
Application No	10/597,866	§	Examiner:	Woo, Kuo-Kong
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Attorney Docket No:	P18764-US1	§		
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For: Fast Hard Handover Scheme And Mobile Station And Base Station Supporting Such Scheme

**Via EFS-Web**

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**APPEAL UNDER 35 U.S.C. §134**

This Brief is submitted to appeal the decision of the Primary Examiner set forth in the Final Official Action dated April 24, 2009, finally rejecting claims 25-48, and the Advisory Action dated July 8, 2009, maintaining those rejections.

The Commissioner is authorized to charge any appropriate fees under 37 C.F.R. §41.20(b)(2) that may be required, and to credit any overpayment, to Deposit Account No. 50-1379.

**Real Party in Interest**

The real party in interest, by assignment, is: Telefonaktiebolaget LM Ericsson (publ)  
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### **Related Appeals and Interferences**

None.

### **Status of Claims**

Claims 1-24 were previously cancelled and are not appealed. Claims 25-48 are pending in the present application, each of which are finally rejected and form the basis for this Appeal. Claims 25-48, including all amendments to the claims, are included in the Claims Appendix.

### **Status of Amendments**

The claims set out in the Claims Appendix include all entered amendments. No amendment has been filed subsequent to the final rejection.

### **Summary of Claimed Subject Matter**

<b>Claim Element</b>	<b>Specification Reference</b>
25. A method for a cellular mobile communications system, comprising the steps of:	Page 4 (Amended), line 21, <i>et seq.</i>
selecting an active set of base stations from a plurality of base stations, wherein each base station in said active set is capable of providing parallel radio links with a mobile station;	Page 4 (Amended), line 21, <i>et seq.</i>
transmitting a packet from the mobile station on a radio uplink;	Page 5 (Amended), line 15, <i>et seq.</i>
transmitting, from each of the base stations of the active set to the mobile station, a measure of the quality of the radio uplink made during receipt of said packet;	Page 6 (Amended), line 8, <i>et seq.</i> Page 7 (Amended), line 14, <i>et seq.</i> Page 11 (Amended), line 20, <i>et seq.</i>
selecting, by said mobile station, only one base station from the active set of base stations based upon said quality measures;	Page 5 (Amended), line 22, <i>et seq.</i>
transmitting information identifying the selected base station from the mobile station; and,	Page 5 (Amended), line 23, <i>et seq.</i>
forwarding the previously-received packet on a fixed link only from the selected base station.	Page 5 (Amended), line 25, <i>et seq.</i>

<b>Claim Element</b>	<b>Specification Reference</b>
33. A mobile station for use in a cellular communications system, comprising:	Page 5 (Amended), line 12, <i>et seq.</i>
means for transmitting a packet to be received by two or more base stations;	Page 5 (Amended), line 15, <i>et seq.</i>
means for receiving a measure of radio link quality experienced by said two or more base stations during the data packet transmission;	Page 6 (Amended), line 8, <i>et seq.</i> Page 7 (Amended), line 14, <i>et seq.</i> Page 11 (Amended), line 20, <i>et seq.</i>
a posteriori selecting means for selecting, based upon said measures, only one of said base stations after said packet has been transmitted from the mobile station; or, alternatively, a priori selecting means comprising means for predicting the radio link quality and adapted for selecting only one of said base stations based on prediction of said radio link qualities before said packet is transmitted; and,	Page 5 (Amended), line 22, <i>et seq.</i>
means for transmitting uplink information identifying said one of the active set base stations that is selected for the packet to be forwarded on a fixed link by the selected base station.	Page 5 (Amended), line 23, <i>et seq.</i> Page 5 (Amended), line 25, <i>et seq.</i>

<b>Claim Element</b>	<b>Specification Reference</b>
44. A base station having means to receive a packet from a mobile station and means to send an acknowledgement to the mobile station in response to the received packet, said base station comprising:	Page 7 (Amended), line 28, <i>et seq.</i> Page 8 (Amended), line 3, <i>et seq.</i>
means for detecting information from the mobile station that identifies a specific base station selected by said mobile station for forwarding said received packet; and,	Page 8 (Amended), line 16, <i>et seq.</i>
means for selectively forwarding the received packet further in a connected radio network only when said detecting means detects that the base station is identified as being selected by said mobile station.	Page 8 (Amended), line 16, <i>et seq.</i>

The specification references listed above are provided solely to comply with the USPTO's current regulations regarding appeal briefs. The use of such references should not be interpreted to limit the scope of the claims to such references, nor to limit the scope of the claimed invention in any manner.

### **Grounds of Rejection to be Reviewed on Appeal**

- 1.) Claims 25, 33 and 44 stand rejected as being anticipated, under 35 U.S.C. §102, by Cheng, *et al.* (U.S. Patent Publication No. 2003/0224774); and,
- 2.) Claims 26-32, 34-43 and 45-48 stand rejected as being unpatentable, under 35 U.S.C. §103(a), over Cheng in view of various additional references which the Examiner has inconsistently used to support the rejections. (see *infra*).

### **Argument**

- 1.) **Claims 25, 33 and 44 are not anticipated, under 35 U.S.C. §102, by Cheng, *et al.* (U.S. Patent Publication No. 2003/0224774).**

The Examiner rejected claims 25, 33 and 44 as being anticipated by Cheng, *et al.* (U.S. Patent Publication No. 2003/0224774). The Applicants traverse the rejections.

It is to be remembered that anticipation requires that the disclosure of a single piece of prior art reveals **every** element, or limitation, of a claimed invention. Furthermore, the limitations that must be met by an anticipatory reference are those set forth in each statement of function in a claims limitation, and such a limitation cannot be met by an element in a reference that performs a different function, even though it may be part of a device embodying the same general overall concept. Whereas Cheng fails to anticipate each and every limitation of claims 25, 33 and 44, those claims are not anticipated thereby.

Claim 25 recites:

25. A method for a cellular mobile communications system, comprising the steps of:

selecting an active set of base stations from a plurality of base stations, wherein each base station in said active set is capable of providing parallel radio links with a mobile station;  
transmitting a packet from the mobile station on a radio uplink;  
transmitting, from each of the base stations of the active set to the mobile station, a measure of the quality of the radio uplink made during receipt of said packet;  
selecting, by said mobile station, only one base station from the active set of base stations based upon said quality measures;  
transmitting information identifying the selected base station from the mobile station; and,  
forwarding the previously-received packet on a fixed link only from the selected base station. (emphasis added)

As described at page 4, line 21, *et seq.* of the application, the Applicants' invention is directed to allowing a mobile station to control uplink selection combining instead of having a combiner node in the fixed portion of the network. The mobile station transmits a packet on a radio uplink which, as those skilled in the art will recognize, can be received by multiple base stations. According to the principles of the invention, each of the base stations in an active set which receives the transmitted packet from the mobile station transmits a measure of the quality of the radio uplink made during receipt of the packet. In response to receiving radio uplink quality measurements from each base station which receives a packet, the mobile station identifies only one of the base stations which should forward a received packet on the base stations fixed link to the network. The mobile station transmits information identifying the selected base station. A base station that previously received a packet from the mobile station, and which receives the information identifying it as the selected base station, then forwards the packet on its fixed link to the network. Cheng fails to teach that combination of functions.

As the Applicants have previously noted, Cheng is directed to a handoff mechanism. It is inherent in such a mechanism that a mobile station can simultaneously transmit signals that are received by more than one base station. The process described by Cheng, however, is directed solely to handing over communication between a mobile station and a first base station to a second base station. The Applicants' invention is directed to eliminating the need for a conventional combiner in the network; a combiner is typically used to perform error checking on received radio

frames and selects the one that has been received error free. In contrast to such conventional combiners in the fixed portion of the network, the Applicants' invention provides functionality that allows a mobile station to select which of a plurality of receiving base stations will forward received packets to the fixed portion of the network. That functionality is not disclosed by Cheng, nor has the Examiner addressed that distinction in the present Final Office Action. Regardless of whether "Cheng's invention is not using any conventional combiner in the fixed portion of the network," as asserted by the Examiner in the present office action, the Examiner has not pointed to any teaching therein of a mobile station selecting which of a plurality of base stations will forward received packets to the fixed portion of the network. Because the teachings of Cheng relate to the handover from one base station to another, it is possible that Cheng did not consider it necessary to discuss the use or functions of a combiner; a lack of such disclosure, however, is an insufficient basis to state that Cheng discloses the functionality of Applicants' invention that obviates the need for such a combiner.

Referring to Figure 2, Cheng discloses a series of packets that are sent in sequential time slots; the first packets (14-15) are sent to cell/RBS A and the next packets (16-19) are sent to cell/RBS B. This is described in paragraph 0006, as referred to by the Examiner:

[0006] The present invention is a process and system for the transmission of data packets on a reverse link between a mobile station and a group of selectable cells (base stations or sectors). A request to make a handoff from a first cell to a second cell within a group of selectable cells is transmitted from the mobile station to the active set. During a cell switching delay, occurring between the request and the beginning of reception of data packets from the second cell, data packet retransmissions and acknowledgement are sent between the first cell and the mobile station. After handoff is complete, data packets are transmitted from the mobile station to the second cell.

Thus, paragraph 0006 confirms that a handoff is made before the mobile station switches its transmission from the first cell (A) to the second cell (B). Furthermore, there is no teaching in Cheng of a copy of a packet waiting in two or more base stations and,

thus, no teaching therein of a mobile station that selects, as a function of quality measures, which of the receiving base stations (i.e., those base stations in the active set that receive a packet) will forward received packets to the fixed portion of the network, as recited in claim 25. Therefore, claim 25 is not anticipated by Cheng. Whereas independent claims 33 and 44 recite analogous limitations, they are also not anticipated by Cheng.

- 2). **Claims 26-32, 34-43 and 45-48 are patentable, under 35 U.S.C. §103(a), over Cheng in view of all additional cited references.**

The Applicants present this appeal despite the inconsistent bases of rejection the Examiner has relied upon to reject the dependent claims. As noted in response to the final office action dated April 24, 2009, the Examiner did not express any basis of rejection in the that office action for claims 36 and 37, which the Examiner previously rejected as unpatentable over Cheng, *et al.* (U.S. Patent Publication No. 2003/0224774) in view of Love, *et al.* (U.S. Patent Publication No. 2004/0219917). Furthermore, the Examiner did not express any basis of rejection in the final office action for claim 45. In the prior office action, the Examiner had asserted that claims 44 and 45 were anticipated by Schramm, *et al.* (U.S. Patent No. 6,542,742). In the final office action, the Examiner asserted that claim 44 is anticipated by Cheng, but failed to state any basis for rejection of claim 45. Thus, the final office was incomplete. Although the Applicants requested that the Examiner clarify all bases of rejection in any future office action(s), the Advisory Action fails to be make clear which basis of rejection the Examiner presently relies on.

In the final office action, the Examiner rejected claims 28, 29, 38, 40 and 43 as being unpatentable over Cheng in view of Longoni, *et al.* (U.S. Patent No. 6,493,564), and claims 27, 31, 32 and 39 as being unpatentable over Cheng in view of Baker, *et al.* (U.S. Patent Publication No. 2002/0119778). With respect to the remaining claims, the Examiner's stated bases for rejection are inconsistent with the prior Office Action. In the final office action, the Examiner rejected claims 34 and 35 as being unpatentable over Cheng in view of Love, *et al.* (U.S. Patent Publication No. 2004/0219917), although the prior action rejected those claims as being unpatentable

over Cheng in view of Virtanen. Similarly, the Examiner rejected claims 46 and 47 as being unpatentable over Cheng in view of Haas (U.S. Patent No. 5,774,814), while in the prior action he rejected those claims over Schramm in view of Haas. Lastly, the Examiner rejected claim 48 as being unpatentable over Cheng in view of Kondo (U.S. Patent No. 5,722,080), while the prior action rejected that claim as unpatentable over Schramm in view of Kondo.

The Examiner's Advisory Action does not clarify the inconsistencies. For example, the Examiner states in the Advisory Action that "Claims 46 and 47 are unpatentable over Schramm in view of Haas." Claims 46 and 47, however, are dependent from claim 44, which the Examiner has only rejected as *anticipated* by Cheng. Similarly, the Advisory Action states that "Claim 48 is unpatentable over Schramm in view of Kondo," even though it is also dependent from claim 44 which, again, has only been rejected as *anticipated* by Cheng.

In any case, as established *supra*, independent claims 25, 33 and 44 are not anticipated by Cheng. Furthermore, nothing in Cheng would render claims 25, 33 and 44 obvious, and the Examiner has not pointed to any teaching in any of the additional cited references to overcome the deficiencies of Cheng. Therefore, whereas claims 26-32, 34-43 and 45-48 are dependent from claims 25, 33 and 44, respectively, and include the limitations thereof, they are also not obvious over Cheng in view of the additional references.

\* \* \*

## CONCLUSION

For the foregoing reasons, the Applicants request that the Examiner's claim rejections be reversed.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Roger S. Burleigh". The signature is fluid and cursive, with the first name "Roger" being more prominent.

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## **CLAIMS APPENDIX**

### **Listing of Claims:**

1-24. (Cancelled).

25. (Previously Presented) A method for a cellular mobile communications system, comprising the steps of:

selecting an active set of base stations from a plurality of base stations, wherein each base station in said active set is capable of providing parallel radio links with a mobile station;

transmitting a packet from the mobile station on a radio uplink;

transmitting, from each of the base stations of the active set to the mobile station, a measure of the quality of the radio uplink made during receipt of said packet;

selecting, by said mobile station, only one base station from the active set of base stations based upon said quality measures;

transmitting information identifying the selected base station from the mobile station; and,

forwarding the previously-received packet on a fixed link only from the selected base station.

26. (Previously Presented) The method according to claim 25, wherein all the active set base stations provide parallel radio downlinks to the mobile station.

27. (Previously Presented) The method of claim 25, wherein the measure of the radio uplink quality is an acknowledgement sent in response from one or more of the active set radio base stations upon said packet being received.

28. (Previously Presented) The method of claims 25, wherein the measure of the radio uplink quality is a transmitted power command.

29. (Previously Presented) The method of claim 25, wherein the measure of the radio link quality is a signal to interference ratio.

30. (Previously Presented) The method of claim 25, wherein the selecting step is made before transmission of said packet and the link quality predicting step is based on the measure received by the mobile station with respect to one or more packets transmitted previously to said packet.

31. (Previously Presented) The method according to claim 25, wherein said packet is segmented into two or more segments for transmission in subsequent radio frames and the selected base station reassembles the segments into said packet.

32. (Previously Presented) The method of claim 27, wherein one or more base stations that have positively acknowledged all previously transmitted segments of said packet are the only ones designated for reception of subsequent segments of said packet.

33. (Previously Presented) A mobile station for use in a cellular communications system, comprising:

means for transmitting a packet to be received by two or more base stations;

means for receiving a measure of radio link quality experienced by said two or more base stations during the data packet transmission;

a posteriori selecting means for selecting, based upon said measures, only one of said base stations after said packet has been transmitted from the mobile station; or, alternatively, a priori selecting means comprising means for predicting the radio link quality and adapted for selecting only one of said base stations based on prediction of said radio link qualities before said packet is transmitted; and,

means for transmitting uplink information identifying said one of the active set base stations that is selected for the packet to be forwarded on a fixed link by the selected base station.

34. (Previously Presented) The mobile station of claim 33, further comprising means for receiving packets transmitted from two or more radio base stations in parallel and combining the packets.

35. (Previously Presented) The mobile station of claim 34, wherein said combining is maximum ratio combining.

36. (Previously Presented) The mobile station of claim 33, wherein said measure of radio link quality is one or more acknowledgements on the receipt of the transmitted packets.

37. (Previously Presented) The mobile station of claim 33, wherein said measure of radio link quality is a transmit power command received from said base stations.

38. (Previously Presented) The mobile station of claim 33, wherein said measure of radio link quality is a signal to interference ratio.

39. (Previously Presented) The mobile station of claim 33, further comprising means for segmenting the packet into segments fitting into radio blocks.

40. (Previously Presented) The mobile station of claim 39, as dependent on the a posteriori selection, wherein the mobile station power control is controlled by power commands received only from one or more of said base stations that have reported positive acknowledgements with respect to the transmitted segments of the relevant packet.

41. (Previously Presented) The mobile station of claim 33, adapted for transmitting the information on the priori selected base station with the relevant packet.

42. (Previously Presented) The mobile station of claim 33, wherein said prediction means uses a measure of radio link quality received in response to one or more previously transmitted packets.

43. (Previously Presented) The mobile station of claim 33, operative to adjust its output power to the commands received from the a priori selected base station only.

44. (Previously Presented) A base station having means to receive a packet from a mobile station and means to send an acknowledgement to the mobile station in response to the received packet, said base station comprising:

means for detecting information from the mobile station that identifies a specific base station selected by said mobile station for forwarding said received packet; and,

means for selectively forwarding the received packet further in a connected radio network only when said detecting means detects that the base station is identified as being selected by said mobile station.

45. (Previously Presented) The base station of claim 44, adapted for receiving said information subsequent to the packet being received by the MS.

46. (Previously Presented) The base station of claim 44, adapted for receiving said information with said packet.

47. (Previously Presented) The base station of claim 44, wherein the detection means are adapted for receiving the selection information on a packet-by-packet basis.

48. (Previously Presented) The base station of claim 44, further comprising means for timing downlink transmission of radio frames by use of a synchronisation signal received via an interface to a fixed part of the network for parallel transmission of radio frames from all base stations of an active set.

**EVIDENCE APPENDIX**

None.

**RELATED PROCEEDINGS APPENDIX**

None.